Revision of the American Species of the Genus CŒNONYMPHA.*

BY HENRY SKINNER, M. D.

These little butterflies have presented difficulties in determining them, which induced me to take an interest in the genus. They are very variable as to the number of spots and ocelli, and vary greatly in the color of the under side. The color of the upper side is fairly constant in the species respectively. I have been making an effort to get specimens for quite a number of years and I have kept all I received; therefore, I have long series representing distribution and seasonal variation. The species in all cases appear to have been described from very few specimens, and the describers could have had no idea of the kind or character of the variation, or its value for erecting new species. *Kodiak* was described from one male; var. *pulla* from one male; *pamphiloides* from one female; *ampelos* one pair; *brenda* two males, one female; *elko* two males, one female. It was only by accident that I found out what *elko* was. I happened to see that I had some of the original specimens from J. E. Bates in my own collection, otherwise I would probably still be in the dark. After a careful study of all the species, I have arrived at the conclusion that of any single character the color of the upper side is the most reliable. It is no infrequent thing to find the ocelli and spots differing on the two sides of the same insect. The original descriptions are given in all cases, so that students of the subject can compare the specimens and the views of the authors with my own conclusions.

C. californica Doub.-Hew., Gen. Diur. Lep., pl. 67, f. 2.

"Shape and size of our *davus*: resembles it in the appearance of the under side, but it is very different on the upper side, which is white, as in *phyrne* ♀; it flies in cool shady places."

The figure represents the upper side and is probably a female. The primaries have a single well-marked ocellus, and a narrow white band extending across the wing from the costa to the inner margin. The secondaries have two ocelli on each wing and a

* The remarks in quotations following descriptions are parts of the original articles.

wedge-shaped white line running from the costa for about a quarter of an inch, then bending at an angle and runs for an eighth of an inch toward the inner margin.

Mr. W. H. Edwards in his Butterflies of North America, Vol. iii, figures *californica*, var. *galactinus* and var. *eyrngii*, and also gives figures of the early stages and describes them. He gives *galactinus* as the Winter form, and *californica* as the Summer form.

Dr. W. J. Holland in his Butterfly Book, pl. 25, figures the upper sides of *galactinus*, *californica* and *eyrngii*, but as the characters of these slight varieties are the on under side the figures are of little value.

This is an exceedingly variable species. It varies in its seasonal broods, and also according to distribution, and doubtless according to altitude on mountains. I have studied a number of specimens from Los Angeles, Cal.; one series having been taken March 18th, and the other June 30th. The characters of the mid-Summer brood, as compared with the early Spring brood are as follows: they (the Summer forms) will average smaller; they are of a more yellowish tinge; they lack the black scales at base of wings; the edges of the wings above have a rusty appearance; the color of the line on under-side primaries is ferruginous, and the whole color of the wings is more of a ferruginous character. The color of the under side varies to a dark smoky grey. The ocelli or spot record of the species is as follows, each pair of numbers representing the under side of primaries and secondaries of a single specimen:

			Primaries.	Secondaries.
2	specimens	have	0	0
5	"	"	0	1
2	"	"	0	2
2	"	"	0	3
2	"	"	1	0
1	"	"	1	1
8	"	"	1	2
8	"	"	1	3
3	"	"	1	4
1	"	"	2	1
1	"	"	2	2
1	"	"	2	3
1	"	"	2	4
2	"	"	2	5

The only conclusion arrived at by a study of these spots is that they are of no value for the differentiation of varieties. I do not see any reason for retaining the names *ceres, eryngii* or *pulla*. *Pulla* was described from a single male, and *ceres* and *eyrngii* are synonyms of *galactinus*. If varieties are described on such slight grounds all our species in this genus, as well as all others, will be burdened by a multiplicity of varietal names. They appear logical when one has a single specimen from a single locality; but from the standpoint of the species as a whole they seem equally absurd.

I have fresh specimens from Cazadero, Cal., March 29th, and April 16th; Los Angeles, Cal., March 13th to 18th, and June 30th. I have two specimens of a *Cœnonympha* from Ashland, Or. (April 24th), which are intermediate in character between *californica* and *ampelos*.

The species has been taken in Cala., Mont., Nev., Oreg., Wash. and Vancouver.

C. californica var. **galactinus** Boisd., Ann. Soc. Ent. F. 2 me Ser. x, 309, 1852.

"Wings whitish on both sides, on the upper unspotted; the anteriors beneath with a ferruginous stripe and a minute apical ocellus; posteriors beneath sprinkled with cinereous on the base, with an obscure angulate stripe, and with two or three minute ocelli. It greatly resembles the preceding (*californica*), except that it is more yellowish white. It inhabits shady spots on mountains. Notwithstanding the contrary opinion of Mr. Lorquin, it may only be a local variety of *californica*, and we should not be surprised if both were only American forms of our *davus*."

This I take to be the Summer form and *californica* the Winter form, and therefore do not agree with Mr. Edward's conclusion as stated in his Butterflies of North America, Vol. iii.

C. ceres Butler. Ent. Mo. Mag., 3, 78, 1866.

"Wings above pale ochre; body pale. Front wings underneath reddish, base pale; anterior margin and the base smoky; a transverse reddish ochre band placed beyond the cell; a broad, indistinct, somewhat smoky subapical band; hind wings pale smoky, becoming more obscure at the base; a pale, ochreous, rather irregular, median band; two submarginal black points surrounded by pale ochre placed between the median nervules; body smoky-ochre. Wing expanse 1½ inches."

"*Hab.*—California. This species is closely allied to *C. californica* (Westwood); but as far as I can judge from the small number of specimens of allied species in the National Collection, it is quite distinct from that insect."

This is the Summer form of which I have numerous specimens from Los Angeles, Cal.

C. californica var. *eryngii* Hy. Edw., Proc. Cala. Acad. Sci., 7, 172, 1876.

"The upper side is exactly that of *C. californica* var. *galactinus*, wanting the black or dusky hairs at the base of the wings, the thorax and abdomen being concolorous. The under side is characterized by the usual straight band on the primaries and the waved or dentate line of the secondaries, but there is an utter absence of points, spots or ocelli, in this respect closely approaching the ornamentation of *C. inornata*. I took this insect only in one locality, flying about the beautiful *Eryngium petolatum* Hook., which here attains a large size, and a most beautiful color. Size of *C. californica*."

"Soda Springs, Siskiyou Co., Cal. August; 11 ♂, 9 ♀; collection Hy. Edwards."

This is evidently a synonym of *ceres* Butler. The unspotted character of Mr. Hy. Edwards' specimens can have no weight. Mr. W. H. Edwards' figures *eryngii* with spots. Mr. Butler says *ceres* has two black points. An examination of my table of spots will show the futility of depending on them.

C. californica var. *pulla* Hy. Edw., Papilio, 1, 51, 1881.

"Entirely of a dark fawn color, with a leaden tint on the upper surface, and a blackish cloud at the base of the primaries, as in the var. *galactinus*. The markings of the under side are invisible, when viewed from above. Beneath dull brown, with a reddish tint on the discal region of the primaries, the markings very indistinct, being lost in the prevailing dark color."

"1 ♂, San Mateo Co., Cal. Type, coll. Hy. Edwards."

I have several specimens which answer this description. I see no valid reason for retaining the name.

C. kodiak Edw., Trans. Am. Ent. Soc., 2, 375, 1868.

"Male:—Expands 1.5 inch. Upper side light brown with a grey shade, the whole surface having a silky gloss, and appearing either brown or grey, according to the point of view; a common whitish bar, caused by the transparency of the wings. Beneath, from base to beyond middle of wings, brown, with grey scales on primaries and blue-grey on secondaries; this space edged by a common band of pure white; thence to margin pale brown, with a whitish or bluish grey tint as viewed. Body above brown; beneath, thorax covered with blue-grey hairs; palpi blue-grey; antennæ annulated brown and white."

"From Kodiak, Alaska. 1 ♂ from coll. of Hy. Edwards, Esq."

This species is close to *californica*. The color above is sufficient to distinguish it from *californica*. Below it hardly differs from some specimens of *californica* My specimens were taken at Kodiak, July 2nd. Dr. Holland figures the type of *kodiak* in his Butterfly Book,

and says it is a female, whereas the original description by Mr. Edwards says "♂."

C. tiphon var. *mixturata* Alpheraky; Romanoff, Mem. sur les Lep., 9, 326, 1877. Kamtschatka.

This I take to be a synonyn of *kodiak*.

C. kodiak var. **yukonensis** Holland, Ent. News, 11, 386, 1900.

"♂.—The primaries on the upper side are bright ochraceous, with the outer margins and the costa shading into grey. A whitish subapical band, very poorly defined, extends beyond the cell from below the subcostals to the second median nervule, as in *C. kodiak* Edw. and *C. ampelos* Edw. The secondaries on the upper side are dark grey, very slightly tinged with ochraceous, traversed by an obscure whitish irregular median band, interrupted between the first and second median nervules. On the under side the primaries are dark ochraceous (in one example deep chestnut-brown), fading at the apex and on the outer margins into pale cinereous. The white band indistinctly seen on the upper side is reproduced on this side, sharply defined and solidly white. A small dark-pupiled ocellus is located near the outer margin, between the upper and lower radials. The secondaries on the lower side are dark fuliginous, passing into pale cinereous on the outer margin, with the median band of white clearly and sharply defined. A submarginal series of ocelli is faintly indicated. The female is like the male, but larger, and throughout paler in color on both sides of the wings. Expanse ♂ 30 mm.; ♀ 32 mm."

"This form in the arrangement of the markings comes nearest *C. kodiak*, with the type of which I have carefully compared it; but in color is nearer *C. inornata*. It may be a distinct species. Two ♂ ♂, Dawson, Yukon Terr., July 1st; 1 ♂, Eagle City, Alaska, July 14th; 2 ♂ ♂, American Creek, Alaska, July 18th."

I saw the specimens of this variety before Dr. Holland described them, and I consider them only color varieties of *kodiak*.

Hab.—Alaska.

C. ampelos Edw., Trans. Am. Ent. Soc., 3, 213, 1870.

"Male:—Expands 1.3 inch. Upper side bright, glossy ochraceous; immaculate; fringes concolored. Under side nearly same shade, paler and changing to buff at apex of primaries; on secondaries slightly paler at outer angle, and elsewhere much powdered with brown atoms; a pale straight ray from costal edge of primaries nearly crosses the wing; secondaries have a similar ray, tortuous, interrupted in the upper median interspaces, not quite reaching abdominal margin; both wings immaculate. Body fuscous, covered with ochraceous hairs; beneath yellowish and grey; palpi grey; antennæ annulated black and white, club black, tip ferruginous."

Female:—Same size, slightly paler; otherwise like male.

"From 1 ♂, 1 ♀. Oregon. Allied to *inornata* Edw."

Mr. Edwards and Dr. Fletcher state that they never saw this species with an ocellus. I have examined my specimens and have

found two specimens with spots on the secondaries. The series of specimens is as follows:

	Primaries.	Secondaries.
1 specimen	0	1
1 "	0	2
30 "	0	0

The species varies in color above to a slight degree, some specimens showing a different shade of light buff. There in considerable difference on the under side. Some specimens almost fuscous; some are immaculate on the under side of both wings. The species flies in Vanc., Wash., Oreg., Nev., Mont., Utah, Idaho.

I have fresh specimens taken in May, June and September.

C. elko Edw., Can. Ent. 13. 57, 1881.

"Male:—Expands .95 to 1 inch. Upper side pale ochre-yellow, immaculate; fringes concolored. Upper side of primaries nearly same ochre-yellow over basal area and part of disk, limited without by a slightly sinuous and crenated edge of deeper color, much as in the allied species; outside this, slightly ochraceous next inner angle, but yellow-buff over apical area. Secondaries have the basal area uniform grey-brown, the outline distinct and in strong contrast with the remainder of the wing, which is yellow-buff. Very slightly grey; the outline is irregularly crenated, with a deep sinus on upper subcostal interspace, and another on lower disco-cellular interspace.

"Female:—Expands 1 inch to 1.02. Upper side like the male. Beneath, the area just outside the the crenated edging on disk of primaries is yellow for a little distance, then tinted ochraceous to margin, in one example a minute black dot in the disco-cellular interspace with white centre, in another no dot; secondaries as in the male, basal area one shade of grey, with distinct crenated outline, and beyond a yellow or buff-ground to margin, very little dusted grey."

"From two ♂ ♂ and two ♀ ♀ taken at Elko, Nevada, 1881, and sent to me by Mr. J. Elwyn Bates, of South Abington, Mass. Mr. Bates informed me that he had quite a number of examples. The present species is nearly the same color with *C. ampelos* Edw., from Oregon; on upper side a little more yellow, and with less gloss. The under side is much lighter, and on secondaries the contrast between the dark basal area, with its clear cut outline and the pale yellow extra discal area, is great. *Ampelos* has the under side of same general character as *inornata* Edw. (only different in coloring), from Montana and Winnipeg. *Elko* resembles *californica* Bois., rather, in which species, many examples have the basal area dark and the entire outline of same distinctly defined."

These spots are not exactly ocelli, but pin-point black dots surrounded by a yellow ring.

	Primaries.	Secondaries.
10 specimens	0	0
13 "	1	0
3 "	1	1

Specimens taken Sept. 9th, at Salt Lake City, expand 1⅝ inch, especially the females. Many specimens are immaculate below. They vary in color and in the definition or distinctness on the two sides of the crenated line below. The dates are May 23rd, July 15th, September 9th. I have specimens of *elko* taken with the types at Elko, Nevada, and received from Mr. J. E. Bates. After careful study of a large amount of material, I see no reason to consider this different from *ampelos*.

C. ochracea Edw. Proc. Acad. Nat. Sci. Phil., p. 163, 1861.

"Male:—Upper side entirely of a bright glossy ochre-yellow, without any spot or mark, except what is caused by the transparency of the wings; base of both wings dark grey; abdominal margin of secondaries pale grey; fringe pale grey, crossed by a darker line. Under side: Primaries same color as above; costal margin, apex and base greyish; near the apex a round, sometimes rounded-oblong, black spot with white pupil and pale yellow iris; this is preceded by an abbreviated, pale yellow, transverse ray. Secondaries light reddish brown, greyish along the hind margin; abdominal margin and base dark grey; near the hind margin and parallel to it is a series of six black dots, sometimes obsolete, usually with white pupil and broad yellow iris; near the base two irregular pale brown spots, and midway between the base and the hind margin a sinuous, interrupted ray of same color, extending nearly across the wing. Female like the male."

"Lake Winnipeg, California, Kansas."

This is quite a variable species. The upper side differs very much in different specimens in regard to the distinctness with which the spots below show through on the upper side. The ocelli or spot record is as follows—under side:

	Primaries.	Secondaries.
5 specimens	1	0
4 "	1	1
2 "	1	2
4 "	1	3
4 "	1	4
11 "	1	5
15 "	1	6

The color of this species, in conjunction with the distinct ocellus on the primaries below, serve to distinguish it from all others.

It is found in British America, Kansas, Colorado, Utah, Montana, Nevada, California. Fresh specimens bear dates as follows: April 30th, June 15th, July 5th, August 4th.

C. brenda Edw., Trans. Am. Ent. Soc., 2, 375, 1868.

"Male:—Expands 1.4 inch. Upper side light buff, immaculate. Under side a shade more yellow; primaries have a faint, transverse, reddish line beyond the cell, commencing at subcostal, thence straight to upper median, after which it is tortuous and disappears near lower median. Secondaries have a similar line angular to end of cell thence tortuous to abdominal margin; primaries have a large subapical round black spot and a point in lower median interspace; secondaries have a submarginal row more or less complete of small spots or points. Body and legs light buff; antennæ buff, club pale ferruginous.

"Female:—Expands 1.5 inch. Upper side like male; beneath, the apex of primaries and space within the discal lines much obscured by grey; subapical spot large, enclosing a white point; spots on secondaries partly wanting."

Var. *a*, Male.—The under side showing no trace of spots except the subapical, which is faint.

"From Los Angeles, Cala., 2 ♂ ♂, 1 ♀. Collection of Tryon Reakirt, Esq."

This is only a much spotted *ochracea*. If we give names to all the variations of *ochracea* we would have six names for the species. I would call attention to the unvarying character of the primaries below with the one ocellus.

Tiphon var. **laidion** Borkh. Eur. Schmett., 1, 91, 29, t. 1, f. 5, 6, 1788.

Dr. Buckell, exhibiting as a visitor, showed specimens of *Cœno nympha inornata*, on which he read the following notes:

"In the paper on *Cœnonympha tiphon*, which I read here in October, 1895 (Ent. Rec., vol. 7, pp. 100-107), I alluded to the American butterfly, described by W. H. Edwards, under the name *C. inornata*, which he and Scudder considered to be a distinct species, but which the late Jenner Weir looked upon only as a variety of *C. tiphon*. My paper was read by Mr James Fletcher, of Ottawa, the entomologist to the Dominion of Canada, and he very kindly sent me the five specimens of what, as he writes 'we here call *C. inornata*,' which had been taken in the Northwest during the Summer of 1895, and which I exhibit this evening. In the right-hand column I have placed some specimens of the Scotch form of *C. tiphon* var. *laidion*, and may just remind you that the characteristic mark of this form is the obsolescent condition of the ocellated spots on the under side of the hind wing. Comparing the two insects, the American specimens have a brighter coloration on the upper surface, and the hind wings are very little, if at all, darker

than the fore wings, whilst in the Scotch specimens they are distinctly darker. On the under surface of the fore wings it is noticeable that the apical ocellated spot is much more developed in the American than in the Scotch specimens. The marked feature of the under surface of the hind wings is the entire absence of ocellated spots in the four upper specimens; on the lowest there is just a trace of one. In four of the Scotch specimens there is likewise an entire abscence of ocellated spots. On the whole, I am disposed to adhere to the opinion that I expressed provisionally in 1895 that *C. inornata* is not sufficiently different from *C. tiphon* var. *laidion* to be worthy of a varietal name." (Ent. Rec., **9**, 99, 1897).

C. inornata Edw. Proc. Acad. Nat. Sci. Phil., p, 163, 1861.

"Male:—Expands 1.4 inch. Upper side ochrey-brown, lighter in the disk of all the wings; costal margin of primaries and abdominal margin of secondaries greyish, no spots above or below; fringe grey, crossed by darker line. Under side: Primaries same color as above from the base to beyond the middle, then a transverse sinuous ray of paler color, and beyond this to hind margin greyish; sometimes this ray disappears, the basal color extending nearly to the apex; secondaries grey, with a slight greenish tinge, darker from base to middle, and this shade separated from the paler margin by a transverse, tortuous, interrupted ray, the course of which is parallel to the hind margin.

"Female:—Wholly dull ochrey yellow, marked as in the male."

"Lake Winnipeg. From Mr. Robert Kennicott."

This species is readily distinguished by its rich dark color, being the darkest of all the species except *haydenii*. Like all the other species it has ocelli. Mr. Edwards' specimens were evidently devoid of ocelli, as he says "no spots above or below."

The ocelli record is as follows:

		Primaries.	Secondaries.
Upper side:	4 specimens	1	0
	8 "	0	0
Under side:	2 "	0	0
	11 "	1	0

Of these eleven specimens one has five faint points on inferiors below and one has one faint point. Two specimens are without locality labels; two are from Qu'appele, Assa., Canada; and the remainder are from Minneapolis, Minn., taken June 18th to July 4th. The species flies in Montana, Minn., Brit. America, Newfoundland and Europe.

I see no reason to doubt Dr. Buckell's conclusion in regard to *inornata* and *laidion*. I have European specimens which I have compared with *inornata* and find them the same.

C. pamphilus Linn., Syst. Nat., Ed. x, 472, 1758.
C. pamphiloides Reakirt, Proc. Ent. Soc. Phil., 6, 146, 1866.

"In a note below I have appended a description of the species of *Cœnonympha*, referred to by Dr. Behr in his Notes on Californian Satyrides, and concerning which, he remarks: 'There exists a second *Cœnonympha* in some sequested valleys of the Northern Sierra that approaches in coloration the European *C. pamphilus*. I have only seen one pair of this species, and not possessing it, I cannot give a diagnosis. It may be identical with *C. inornata* Edw., or *C. ochracea* Edw., or some northern species.'"

"Upper surface very similar to *pamphilus*; the ciliæ, however, are considerably longer. Under surface of the primaries as in *pamphilus*; secondaries mottled greenish brown from the base to the middle, abruptly terminated by a very irregular margin, adjoining which, on upper half, from the costa, a yellowish grey patch; hinder half of wings of same color as the basal portion, but very much diluted in tone; a submarginal row of six white spots, each encircled by a brownish green ring, all minute but still very distinct. Expanse 1.13–1.18 inch.

"*Hab.*—California (coll. Tryon Reakirt)."

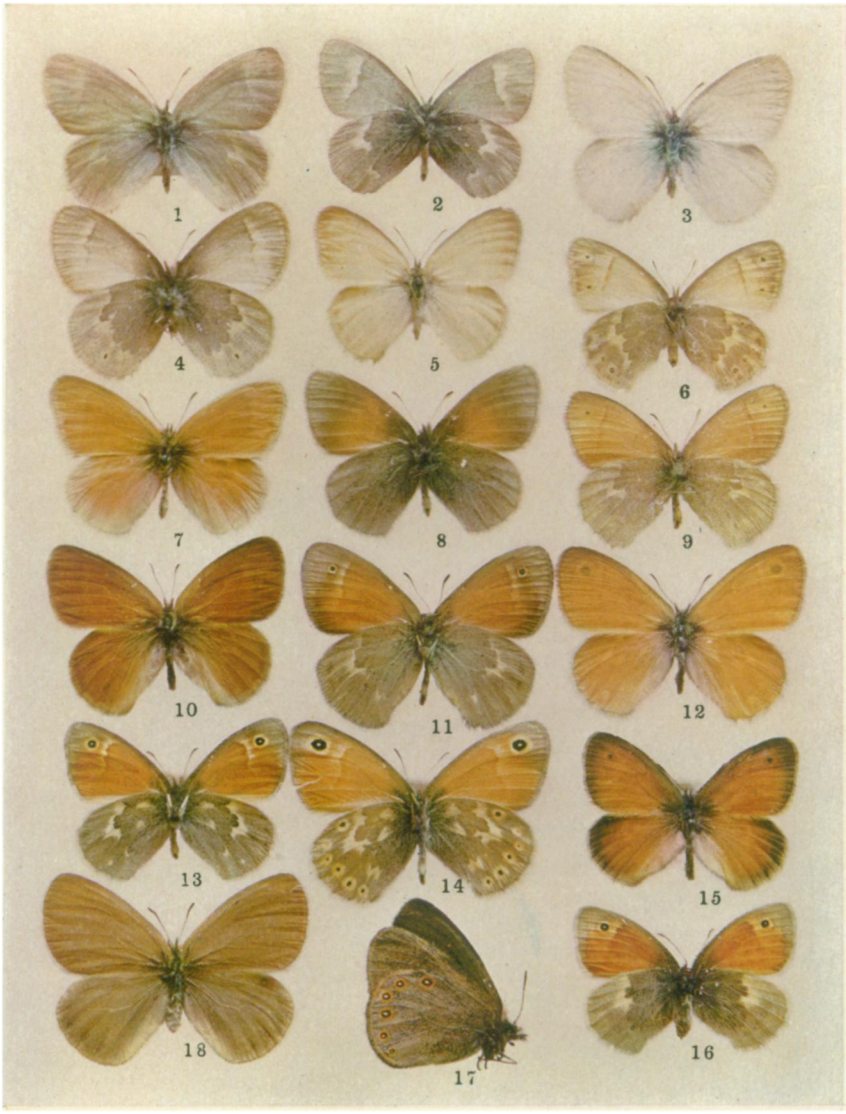
The unique type of this is a female in the collection of Dr. Strecker. Dr. Strecker in his Synonymical Catalogue, published in 1878, says: "I possess Reakirt's original type from California, which differs in nowise from the ordinary European form." I have in my collection two specimens without locality labels; two with Cala. on the pins. I know nothing of these specimens, as I have never received *pamphilus* from California. It is quite possible that Reakirt made a mistake in thinking his specimen came from California, as such mistakes were common in those days, and little attention was paid to data. Time will settle this question, as if *pamphilus* is really found in California, we can take it for granted that Reakirt did not make a mistake, except as to the name of the species.

Pamphilus is close to *ochracea* Edw. but smaller; the inner half of under side of secondaries is darker (olive green), and the spots the merest white or silvery pin points.

What Dr. W. J. Holland figures in his Butterfly Book as *pamphiloides* is the spotted form of *ochracea*, which Mr. Edwards called *brenda*. The types of the latter are in Dr. Strecker's collection.

C. haydenii Edw., U. S. Geog. Surv. of Montana, etc. F. V. Hayden, for 1871 (1872).

"Male:—Expanse 1.6 inch. Upper side fuscous, immaculate; under side a shade paler, much irrorated with gray scales; primaries immaculate; secondaries have a complete series of black ocelli along the edge of hind margin, one in



REVISION OF THE GENUS CŒNONYMPHA (SKINNER).

each interspace; each ocellus narrowly ringed with ochraceous, and having minute white pupil."

The female was described from a male by Mr. Edwards, Can. Ent., 33, 32, 1891. The female was described by myself, Can. Ent., 29, 156, 1897, from specimens taken in the Yellowstone Park by Prof. A. J. Snyder. It is like the male in markings, but in color quite different as it is light yellowish brown. Fresh specimens bear date Hayden Valley, Yellowstone Park, August 1st, and Beaver Canon, Idado, July 23rd. The species has been found in Montana, Idaho, Colorado and Wyoming.

LIST OF THE SPECIES.

1. Californica *Boisd.*
   var. galactinus *Boisd.*
   ceres Butl.
   eryngii Hy. Edw.
   aberr. pulla *Hy. Edw.* *
2. Kodiak *Edw.*
   var. yukonensis *Holl.*
3. Ampelos *Edw.*
   elko Edw.
4. Ochracea *Edw.*
   brenda Edw.
5. Typhon var. laidion *Borkh.*
   inornata Edw.
6. Pamphilus *Linn.*
   pamphiloides Reak.
7. Haydenii *Edw.*

DESCRIPTION OF PLATE.

No. 1. *C. kodiak*, ♂, Kodiak, Alaska, July 2nd.—Upperside.
" 2. " " " " " *Underside.*
" 3. *C. californica* ♂, Los Angeles, Cala., March 8th.—Upperside.
" 4. " " Kaweah, Cala., Early Spring. *Underside.*
" 5. *C. galactinus*, ♂, Los Angeles, June 30th. Upperside.
" 6. " " California, Summer. *Underside.*
" 7. *C. ampelos*, ♂, Oregon. Upperside.
" 8. " " Umatilla, Or.† *Underside.*
" 9. " " Salt Lake City, Utah, Sept. 9th. *Underside.*
" 10. *C. laidion*, ♂, Minneapolis, Minn., June 17th. Upperside.
" 11. " " " " " " *Underside.*
" 12. *C. ochracea*, ♂, Park City, Utah, July 1st. Upperside.
" 13. " " Bear Creek, Colo., July 3rd. *Underside.*
" 14. " " Park City, Utah, July 8th. *Underside.*
" 15. *C. pamphilus*, ♂, California. ? Upperside.
" 16. " ♀, California. ? *Underside.*
" 17. *C. haydenii*, ♂, Beaver Canon, Idaho, July 23d. Both sides.
" 18. " ♀, " " " " " Upperside.

* Since this paper was written I have seen the unique type of *pulla* in the collection of the American Museum of Natural History. It is a dark slate or smoke color, and may be considered an aberration of *californica* until sufficient material fixes it definitely.

† Very dark immaculate form.